

Serial No.
40904403

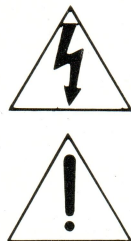
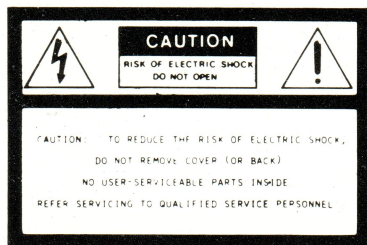


Stereo Cassette Deck
S-90

INSTALLATION and OPERATION MANUAL

SHERWOOD S-90 CASSETTE DECK





The lightning flash with arrowhead symbol, within and equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SAFETY INSTRUCTIONS

1. **READ INSTRUCTIONS** — All the safety and operating instructions should be read before the appliance is operated.
2. **RETAIN INSTRUCTIONS** — The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS** — All warnings on the appliance and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS** — All operating and use instructions should be followed.
5. **WATER AND MOISTURE** — The appliance should not be used near water — for example near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. **VENTILATION** — The appliance should be situated so that its location or position do not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
7. **HEAT** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
8. **POWER SOURCES** — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
9. **POWER-CORD PROTECTION** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
10. **CLEANING** — The appliance should be cleaned only as recommended by the manufacturer.
11. **POWER LINES** — An outdoor antenna should be located away from power lines.
12. **NONUSE PERIODS** — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
13. **OBJECT AND LIQUID ENTRY** — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
14. **DAMAGE REQUIRING SERVICE** — The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
15. **SERVICING** — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to a qualified service personnel.

Unpacking and Installation

Congratulations on Your Purchase!

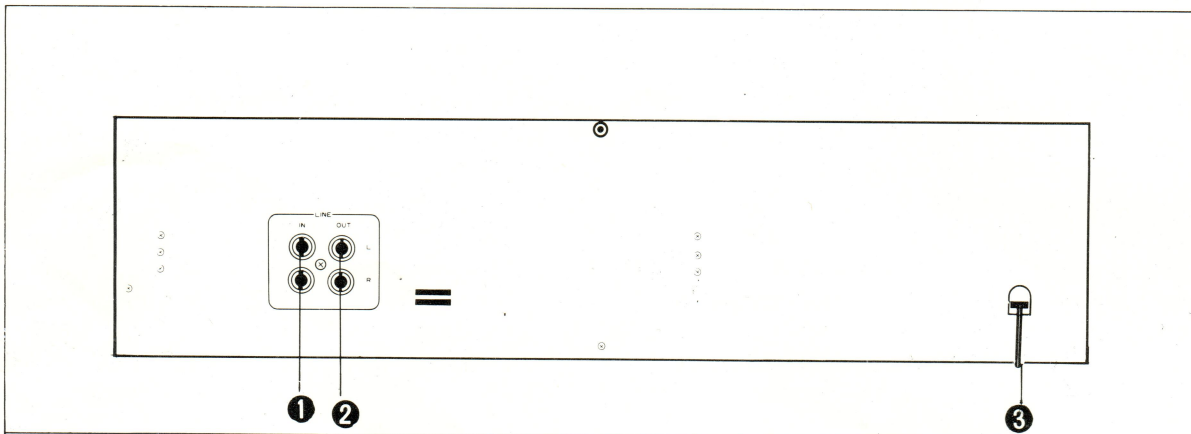
Your new high fidelity Tape Deck is designed to deliver maximum enjoyment and years of trouble free service. Please take a few moments to read this manual thoroughly. It will explain the features and operation of your Tape Deck and help insure a trouble free installation.

Please unpack your Tape Deck carefully. We recommend that you save the carton and packing material. They will be helpful should you ever need to move your unit and may be required if you ever need to return it for service. Your Tape Deck is designed to be placed in a horizontal position and it is important to allow at least two inches of space behind your unit for adequate ventilation and cabling convenience.

To avoid early damage, never place the unit near radiators, in front of heating vents, in direct sun light, or in excessively humid or dusty location.

Connect your complementary components as illustrated in the following section.

Rear Panel Connections



1. LINE IN JACKS

Connect the audio cords between the LINE IN of this unit and the TAPE OUT or TAPE REC terminal of your Amplifier. It may be selected as a recording source.

NOTE: Make sure that the white lead (left) and red (right) are correctly connected.

2. LINE OUT JACKS

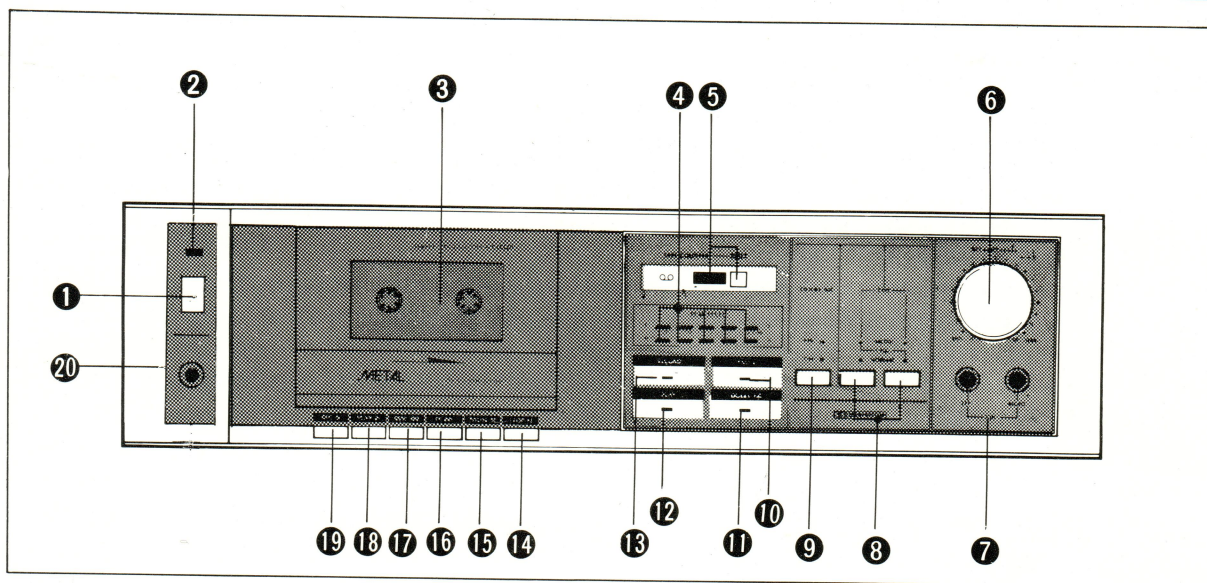
To play tapes, connect the cords between the LINE OUT of this tape deck and the TAPE IN or TAPE PB terminal of your Amplifier.

3. AC INPUT CORD

Plug cord into AC outlet.

WARNING : TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Front Panel Controls



1. POWER SWITCH

To turn on the power, depress the POWER switch in, then relative power indicator (2) will light. To turn off the power, depress it out.

2. POWER INDICATOR

This red LED indicator will light when POWER button is ON position.

3. CASSETTE DOOR

This air damped soft eject cassette door glides open smoothly. This door can be easily dismounted by pushing it up and then taking it out toward the front after opening the door. This gives easy access to the heads and transport parts for cleaning and demagnetizing.

4. PEAK LEVEL DISPLAY

This two color LED peak level display (5 LEDs/CH) indicates the recording or output (playback) level. This is useful in recording level adjustment. See RECORDING PROCEDURE for details.

5. TAPE COUNTER/RESET BUTTON

The tape counter drive is associated with tape transport to enable you to accurately locate each point on the tape. Pushing the reset button resets the counter indication to "000"

6. RECORDING LEVEL CONTROLS

These controls adjust the recording level from the LINE IN inputs or MIC inputs.

7. MIC JACKS

This MICROPHONE jacks are used for connection of microphone, microphone mixer, telephone pick-up coil, etc. The microphones should be disconnected in the case of recording through the LINE IN input jacks on the rear panel. Any high-quality low-impedance microphone equipped with a phone plug may be used.

8. TAPE SELECTOR

Selflocked switches for selecting both EQ and BIAS together according to the type of the tape to be recorded and played: NORMAL, CrO₂ or METAL. Normal gives 120 μ Sec EQ. CrO₂ and Metal give 70 μ Sec. Refer to the list on page 10 for the recommended position for each commercially available cassette tape.

9. DOLBY* NR SWITCH

Depress this switch in ON position when recording with Dolby Noise Reduction system, or when playing back recordings which have been made using DOLBY NR.

- Principle of DOLBY System "B" Type

The Dolby system functions so that it automatically increases recording levels of medium and high frequencies when the recording signal level is lower than the specified level (encoding), and automatically reduces the output levels to the normal level during playback (decoding). In this way, the tape hissing noise is remarkably reduced without affecting the sound quality. The Dolby system used in your Tape Deck improves S/N ratio by about 5dB at 1KHz and about 10dB at 10KHz.

- * Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

10. PAUSE INDICATOR

This red LED indicator will light when PAUSE button is depressed, indicating that the deck is in the pause mode.

11. DOLBY NR INDICATOR

This green LED indicator will light when DOLBY NR switch is depressed, indicating that the deck is in the DOLBY NR ON mode.

12. PLAY INDICATOR

This green LED indicator will light when PLAY button is depressed, indicating that the deck is in the play mode.

13. RECORD INDICATOR

This red LED indicator will light when RECORD button is touched, indicating that the deck is in recording mode.

14. STOP/EJEC BUTTON

As you press this button, all other operation buttons are released and the tape motion stops. Pressing this button again opens the door for removal of the cassette.

15. PAUSE BUTTON

To momentarily pause during recording or playback, depress this button. To start, depress it again. Also use this button for standby recording. Depress the PAUSE button first and then RECORD button in sequence. When you are ready for recording after adjusting RECORD LEVEL controls, etc, depress PAUSE button again, then recording will start immediately.

16. FAST FORWARD (►►) BUTTON

Depressing this button sends the tape fast to the right hand reel. When the tape reaches the end, the transport stops automatically.

17. REWIND (◀) BUTTON

Depressing this button starts sending the tape fast to the left hand reed. When the tape is fully rewound, the transport stops automatically.

18. PLAY (▶) BUTTON

The tape starts running for playback as this button is depressed. Playing is stopped automatically when the tape reaches the end.

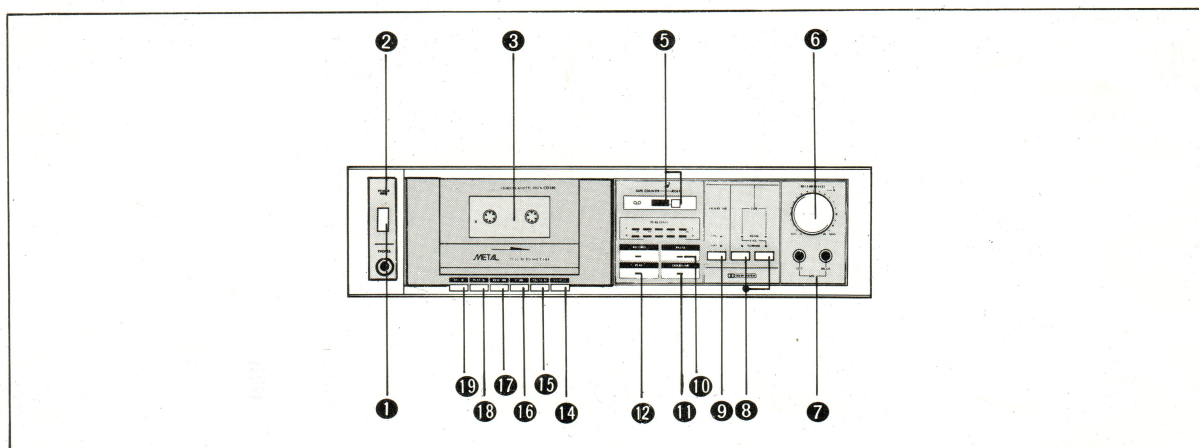
19. RECORD BUTTON

- **IMMEDIATE RECORDING;** When this button is depressed, recording starts immediately as **ONE TOUCH OPERATION** while **RECORD INDICATOR** lights at the same time and the **PEAK** level meters display the recording levels.
- **STANDBY RECORDING;** Touch the **PAUSE** button first and then **RECORD** button in sequence; then **REC**, **PLAY** and **PAUSE** indicators will light up indicating that the cassette deck is on the recording mode as the stand-by state waiting for your adjustment or the correct starting time. When you are ready to record, touch **PAUSE** button again, then recording will start immediately.

20. HEADPHONE JACK

Stereo headphones can be plugged into this jack for sound monitoring during recording or playback.

Playback Procedure



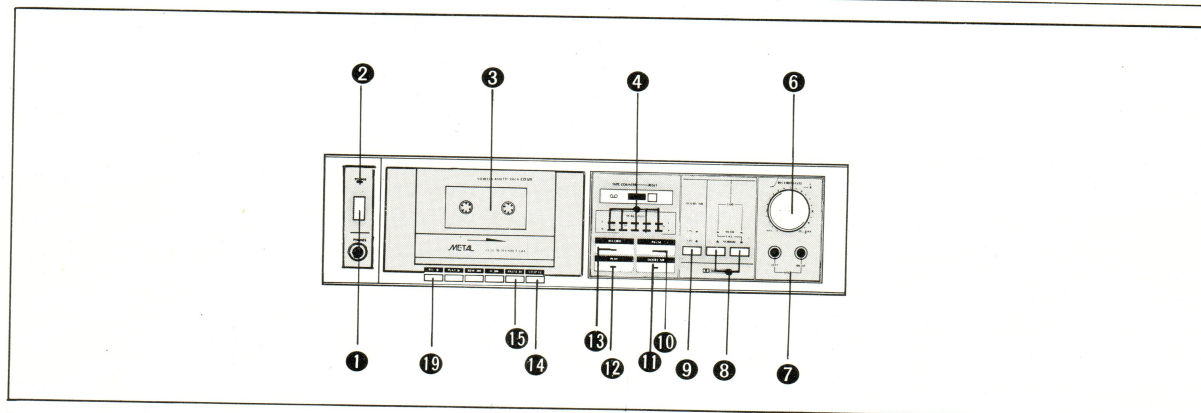
1. Turn on the **POWER** switch (1), then the **Power** red **LED** indicator (2) will light that this system is on.
2. Depress **EJECT** button (14), firmly insert the cassette into the cassette holder with the tape side to be played facing forward, and set it in place.
3. Set the **TAPE SELECTOR** (8) to appropriate position according to the type of tape to be played. Refer to the list on page 10 for the recommended position for each commercially available cassette tape.
4. To play **DOLBY** encoded tape, depress **DOLBY NR** switch (9) to its **ON** position, then **DOLBY NR INDICATOR** (11) will light.
5. Depress the **PLAY** (▶) button (18). The tape will now start playing. Adjust the volume with the volume control of the amplifier.
6. To stop playing, depress **STOP** button (14) and depress **EJECT** button (14) again for removal of the cassette.

NOTE:

- Set the tape selector to the same position in both recording and playback modes according to the type of tape to be used. If recorded in the wrong position, adjust the tone with the tone controls of the amplifier.

- If a chromium dioxide (CrO_2), Ferrichrome (FcCr) or Metal cassette recorded by another cassette deck is played on this cassette deck and the high frequency response is poor, set the TAPE SELECTOR switch to NORMAL for playback.

Recording Procedure



1. Turn on the POWER switch (1), then relative POWER INDICATOR (2) will light.
2. With the tape side to be recorded facing in front, insert the cassette firmly into the cassette door, and set it in place. Check to make sure that the cassette erasure tab on the upper edge has not been removed.
3. Set the tape selector to appropriate position according to the type of tape to be recorded. Refer to the table page 10.
4. To record the microphone inputs, plug the microphones to the MICROPHONE jacks (7). The microphones should be unplugged in the case of recording through the LINE IN jacks.
5. To make a recording in Dolby noise reduction (NR) mode, depress DOLBY NR switch (9) to its ON position.
6. To control the start for the adjustment, depress the PAUSE button first (15) then depress the REC button (19). The tape deck is now set in recording mode as the standby state.

At this time PAUSE, REC and PLAY INDICATORS ((10),(13) and (12)) will light.

NOTE : If immediate recording is required rather than standby recording, touch REC button only.

Remember about ONE TOUCH RECORDING.

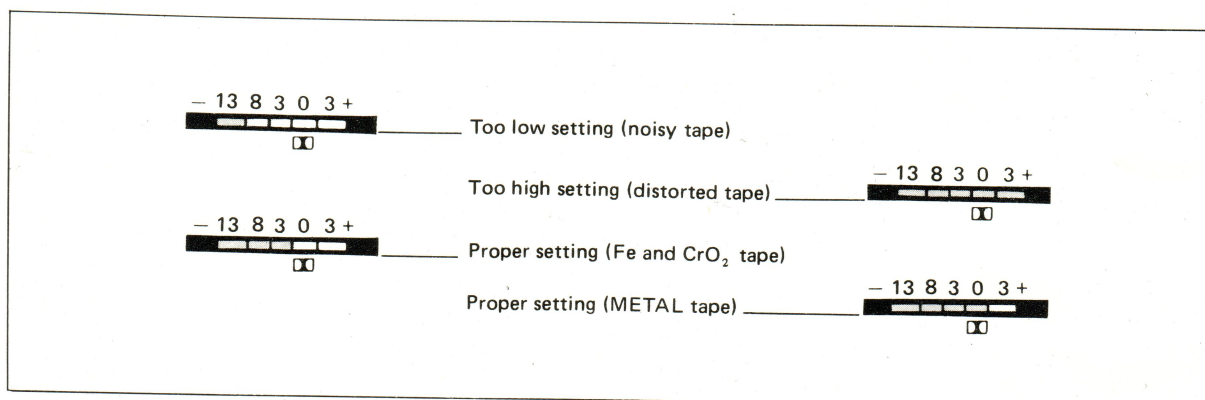
7. Adjust the recording level with the RECORD LEVEL controls (6) so that the LED peak display (4) indicates about 0dB (+3dB for METAL) at the peak reading of your program.
8. When you are ready for recording, touch the PAUSE (II) button (15) again, then recording will start immediately.

NOTE:

- If the cassette erasure tab on the upper edge has been removed, recording will not function.
- You can monitor the recording for quality check either by headphones or by Speakers by depressing the TAPE MONITOR switch on your amplifier.
- To erase a tape without adding new recording, turn the RECORD LEVEL controls to "0" and set the TAPE SELECTOR (8) to METAL position (highest Bias position), then touch RECORD (●) button.

RECORDING LEVEL ADJUSTMENT

High recording level is recommended to reduce tape noise, but overloaded and distorted tape result if the level is too high. Generally, recording levels should be adjusted so that the level meters indicate as fully as possible to the proper level shown at below for NORMAL and CrO_2 tape except METAL tape. The METAL tape permits recording level up to +3dB higher position on the level meters.

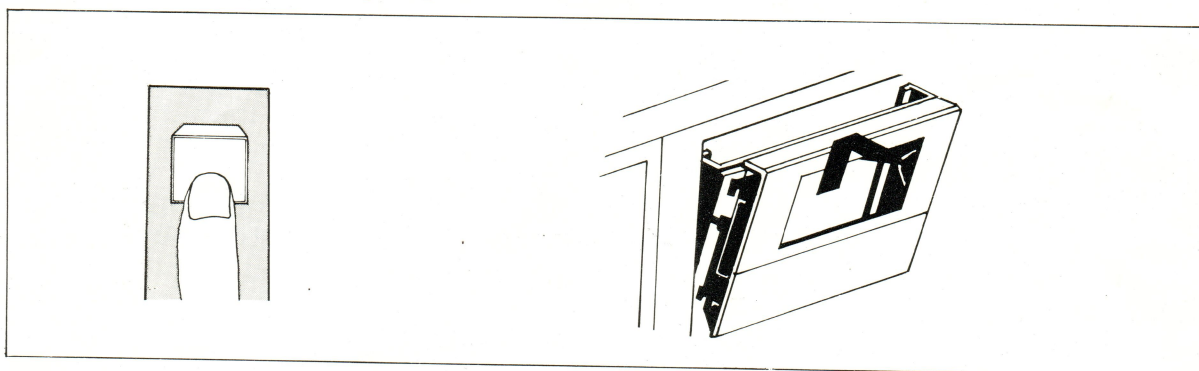


Maintenance

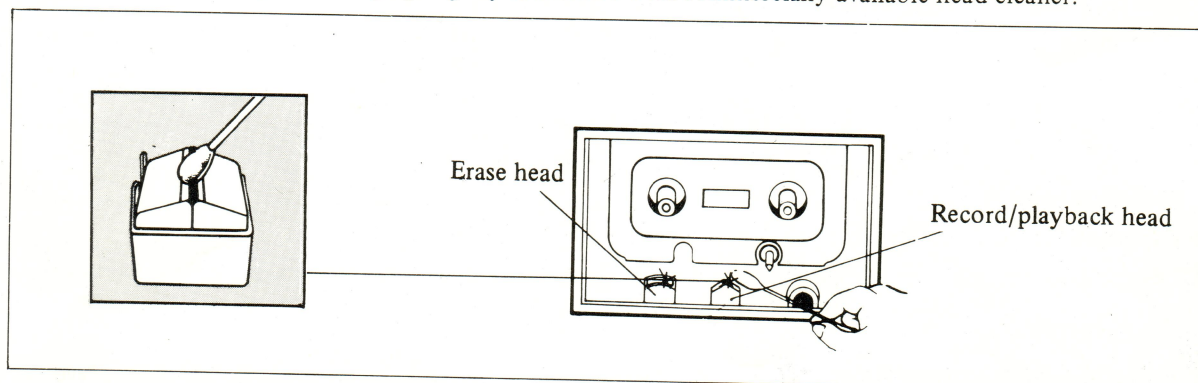
CLEANING OF HEADS AND TAPE PATH

Generally, cleaning after every 10 hours of operation will be sufficient. However, all surfaces over which tape travels should be cleaned before making high quality recordings.

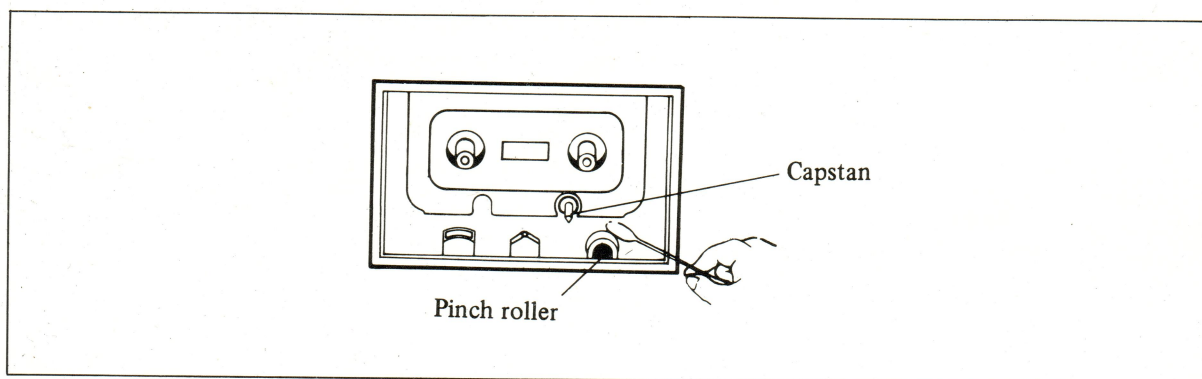
1. Set the POWER switch to OFF and remove cassette door lid by pushing it up and then taking it out toward the front side after opening the door.



2. Wipe the heads using a cleaning tip slightly moistened with commercially available head cleaner.

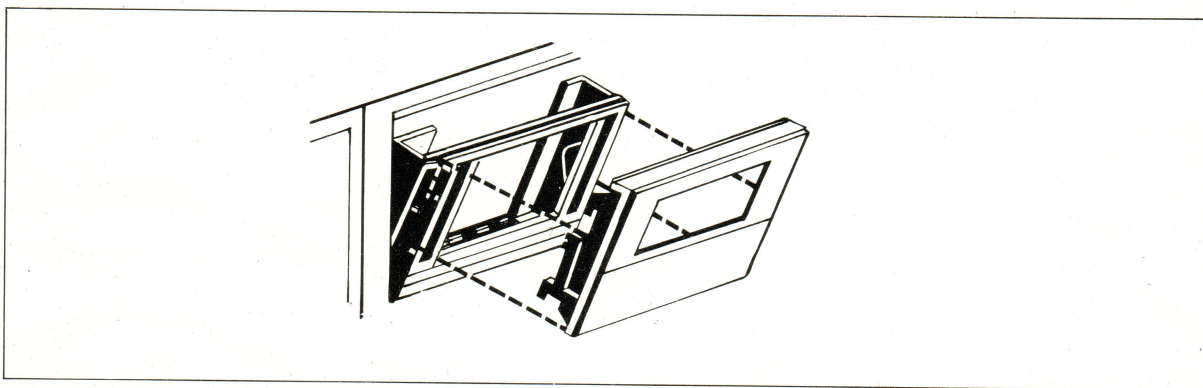


3. Set the POWER switch to ON and depress the ► button. Wipe the capstan and pinch roller using another cleaning tip slightly moistened with the commercially available rubber cleaner. When the cleaning is finished, depress the STOP button.



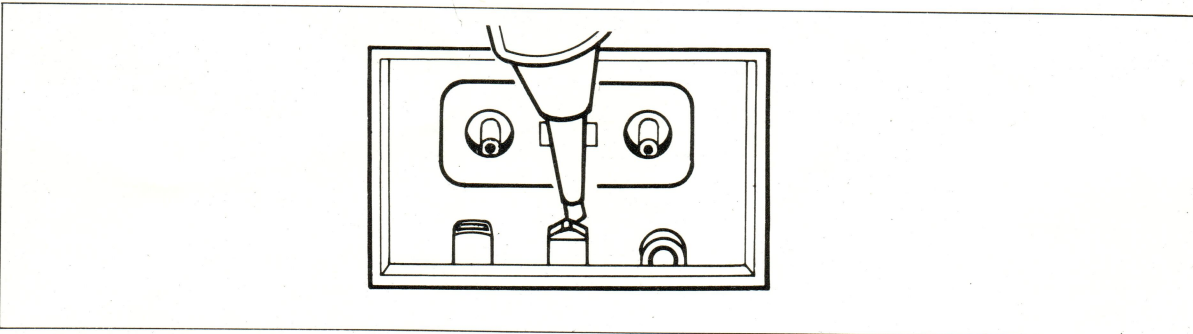
4. Replace the door lid.

- Do not insert a cassette until the cleaner has completely dried.



DEMAGNETIZING HEADS

Residual magnetism will gradually build up on the heads through continuous use and cause erasure of high frequencies and hiss. The heads and metallic parts of the tape path should be demagnetized after 20-30 hours of operation with a commercially available head demagnetizer. Be sure the recorder is turned off.



CLEANING CABINET

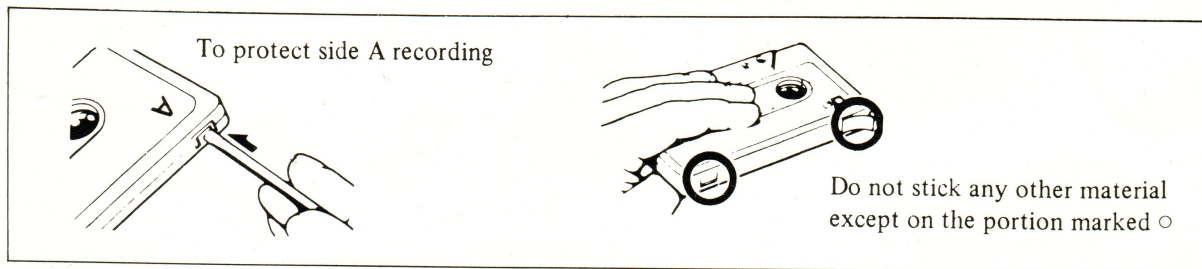
Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild soap solution. Do not use any type of scouring powder or solvent such as alcohol or benzene.

Note on Cassettes

TO PROTECT RECORDING FROM ACCIDENTAL ERASURE

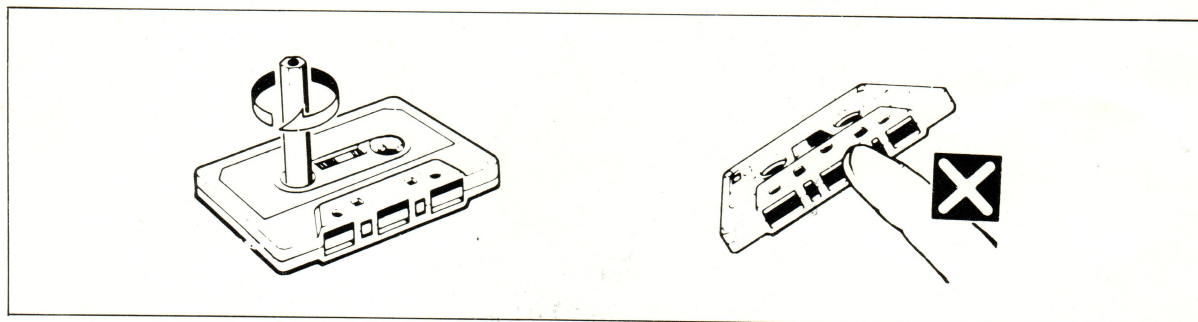
Remove the tab as illustrated so that the REC button cannot be depressed. To record on a cassette after tabs

have been removed, simply cover the slot with cellophane or vinyl tape.

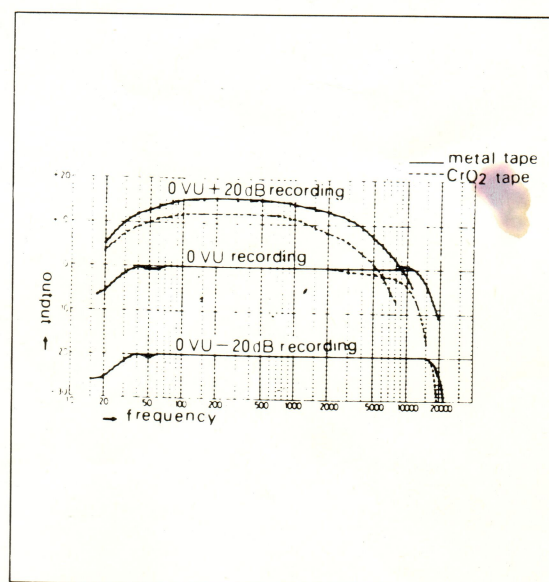


CASSETTE CARE

- From a tape length point of view, most of the tape manufacturers use C-60's (30 min x 2) as their standard, some C-90's (45 min x 2) and C-120's (60 min x 2) less often. If the length of the tape is longer it can stretch and become soft. We would like to recommend that you use C-60 or C-90 tapes for better quality sound and safe tape operation. C-120 cassette tape is so thin and soft that, if the capstan or pinch roller is even slightly dirty, it often coils around the capstan or pinch roller and results in tape breakage, so if you use C-120 tape, perfectly clean capstan and pinch roller.
- Before inserting a cassette, take up the slack of the tape to prevent it from becoming entangled around the capstan.
- Avoid touching the tape surface of a cassette. Protect it from dust by storage in a case. Even minor dirt of dust could cause contamination of the heads resulting in noise and sound drop-out.



- Keep cassettes away from magnetic equipment such as speakers, amplifier, etc. as erasure or distortion of your recorded tape could occur.
- Do not expose a cassette to direct sunlight, extreme cold temperature or moisture.
- Avoid rewinding or winding in fast forward mode just before storing a cassette tape as this may cause stretching of the tape edge if it is left over a period of time.
- Do not stick any thick paper or tape on the cassette, as this may effect tape contact with the head.
- METAL Tape is the latest development in cassette technology, an advance that allows the cassette deck to complete on equal audio terms with the new generation of amplifiers, tuners and turntables. Comparing with CHROME tape, METAL tape has better signal to noise ratio, wider frequency response and higher MOL (maximum output level).



TAPE EQ & Bias Recommendation

- The following list shows our recommendation setting for commercially available cassettes. The setting could be changed to your preference.

MAKER	TYPE NUMBER	TAPE SELECTOR
BASF	Performance	NORM
	Studio	NORM
	Professional I	NORM
	Professional II	CrO ₂
	SCR	CrO ₂
	PROfession IV*	METAL
MAXELL	LN	NORM
	UD	NORM
	UDXL I*	NORM
	UDXL II	CrO ₂
	MX*	METAL
SMAT	SK*	CrO ₂
	SD*	CrO ₂
	HD*	NORM
	LH	NORM
UNION	UDX*	CrO ₂
	Classic*	CrO ₂
	3000	NORM
	1000	NORM
MEDIA	UTM*	CrO ₂
	TM 100*	NORM
	HDP	NORM
	MT	NORM
SCOTCH	Highlander	NORM
	Dynarange	NORM
	Master I*	NORM
	Master II*	CrO ₂
	Metalfine	METAL
SONY	LN	NORM
	LF	NORM
	UHF	NORM
	AHF*	NORM
	CR	CrO ₂
	JHF*	CrO ₂
	metallic*	METAL
TDK	Maverick	NORM
	D	NORM
	AD OD*	NORM
	SA*	CrO ₂
	MA-R*	METAL

NORM – Ferric

CrO₂ – Chromium Dioxide

Metal – metal

*Recommended Design Reference Tape

Specifications

Type	Soft touch front loading stereo cassette deck with Dolby NR system	
Track system	4 track, 2 channel stereo recording/playback	
Recording system	AC bias system (bias frequency: 85 KHz)	
Erasing system	AC system	
Tape speed	1-7/8 ips (4.76 cm/sec)	
Heads	Hard permalloy recording/playback head x 1 Double Gap erasing head x 1	
Motor	Electronic governor controlled DC motor	
Wow and flutter	Less than 0.08% (WRMS)	
Fast winding time	Approximately 120 seconds with C-60 cassette tape	
Frequency Response		
-20dB REC	Normal tape	25-15,000 Hz (40-13,500 Hz +1, -3dB)
	CrO ₂ tape	25-16,000 Hz (40-14,000 Hz +1, -3dB)
	METAL tape	25-16,500 Hz (40-14,500 Hz +1, -3dB)
0dB REC (DOLBY NR OFF)	METAL tape	40-11,000 Hz ±3dB
Signal to noise ratio (REC/PB)	Dolby NR ON (weighted)	62dB (Normal tape) 66dB (CrO ₂ tape) 65dB (Metal tape)
	Dolby NR OFF (weighted)	53dB (Normal tape) 57dB (CrO ₂ tape) 56dB (Metal tape)
Total harmonic distortion	Less than 1.0% at 1 KHz, 0dB REC	
Input sensitivity/Impedance	MIC 1.0mV/600-2.7K ohms LINE 70mV/47K ohms	
Output level/Impedance	LINE 450mV/1.0K ohms	
Built-in features	Dolby NR system (B type) with Dolby NR INDICATOR Full auto stop mechanism in all modes Soft eject cassette door with air damper Mechanical Soft touch transport with PLAY, REC, PAUSE indicators 2color LED peak display 3 step tape selector (NORM, CrO ₂ , METAL)	
Power consumption	11 Watts	
Dimensions	440(W) x 110(H) x 200(D) mm 17.3(W) x 4.3(H) x 2.7(D) inches 2.9Kg/6.4Lbs	

NOTE: Design and specifications subject to change without notice for improvements.

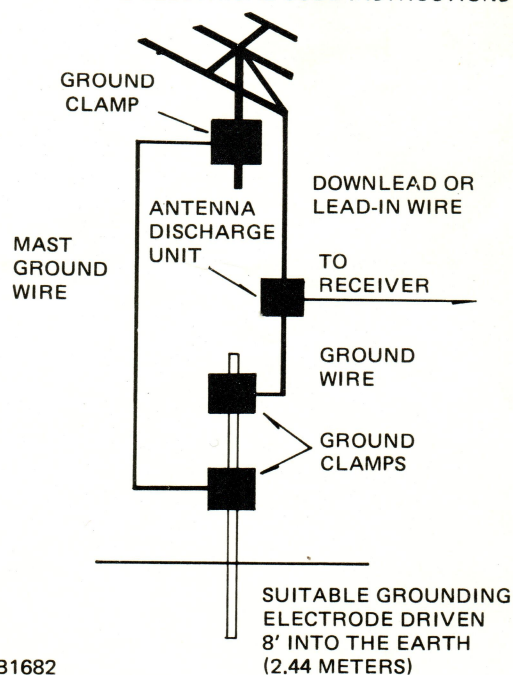




SAFETY INSTRUCTIONS

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5. **WATER AND MOISTURE** — The appliance should not be used near water — for example near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. **VENTILATION** — The appliance should be situated so that its location or position do not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
7. **HEAT** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
8. **POWER SOURCES** — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
9. **POWER-CORD PROTECTION** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
10. **CLEANING** — The appliance should be cleaned only as recommended by the manufacturer.
11. **POWER LINES** — An outdoor antenna should be located away from power lines.
12. **OUTDOOR ANTENNA GROUNDING** — If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1978, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode, See Figure 65.1 below

FIGURE 65.1
EXAMPLE OF ANTENNA GROUNDING AS
PER NATIONAL ELECTRICAL CODE INSTRUCTIONS



SB1682


- a. Use No. 10 AWG copper or No. 8 AWG aluminum or No. 17 AWG copper-clad steel or bronze wire, or larger as ground wires for both mast and lead-in.
 - b. Secure lead-in wire from antenna to antenna discharge unit and mast ground wire to house with stand-off insulators, spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
 - c. Mount antenna discharge unit as closely as possible to where lead-in enters house.
13. NONUSE PERIODS — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
14. OBJECT AND LIQUID ENTRY — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
15. DAMAGE REQUIRING SERVICE — The appliance should be serviced by qualified service personnel when:
- A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
16. SERVICING — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to a qualified service personnel.

NOTE 1. RESISTANCE VALUES ARE INDICATED IN OHMS
UNLESS OTHERWISE SPECIFIED.
(K=1,000, M=1,000,000)

NOTE 2. CAPACITANCE VALUES ARE SHOWN IN MICROFARADS
UNLESS OTHERWISE NOTED.
(P=PICO - MICROFARADS)

NOTE 3. COMPONENT VALUES ARE SUBJECT TO CHANGE
WITHOUT NOTICES.

NOTE 4. ALL VOLTAGES ARE REFERENCED TO GROUND
UNLESS THE FOLLOWING CONDITIONS
DC : NO SIGNALS EXCEPT WHERE INDICATED
AC : R.M.S.
DC : DOLBY LEVEL TYPE : TEAC MTT -150

NOTE 5. THE  MARK FOUND ON SOME COMPONENT
PARTS INDICATES THE IMPORTANCE OF
THE SAFETY FACTORS OF THE PARTS.
THEREFORE, WHEN REPLACING, BE SURE TO USE
PARTS OF IDENTICAL DESIGNATION

A. ALL REPLACEMENT COMPONENTS IDENTIFIED BY THE MANUFACTURER AND ONLY WITH ORIGINAL TYPE SPECIFIED BY THE MANUFACTURER AND INSTALLED AS THE ORIGINAL, WITH SPACERS AND POSITIONED AWAY FROM ADJACENT COMPONENTS WHERE APPLICABLE.

B. ALL SOLDERING MUST BE DONE IN A PROFESSIONAL MANNER USING SOLDER WITH RESIN CORE ON

C. ALL COVERS, SHIELDS AND INSULATING SPACERS MUST BE REPLACED BEFORE RETURNING APPLIANCE TO CUSTOMER.

D. A DAMAGED POWER SUPPLY CORD MUST BE REPLACED BEFORE RETURNING APPLIANCE TO CUSTOMER.

E. A DIELECTRIC TEST CONSISTING OF 50VAC 60HZ IS TO BE APPLIED BETWEEN BOTH BLADES OF THE POWER SUPPLY CORD AT EACH PLUG AND THE EXPOSED CONDUCTIVE SURFACE OF THE APPLIANCE FOR A PERIOD OF NOT LESS THAN ONE SECOND BEFORE RETURNING APPLIANCE TO CUSTOMER.

```
REC TRAP : L201L,R L202L,R
INDUCTOR 4.5 H : L203L,R
OSC COIL : L301
NE 646B : IC201L,R
          IC301
BA6137 : IC601L,R
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